

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In Re Patent Application of	:		
Tamon Itahashi, <i>et al.</i>	:		
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Conf. No.: 3156	:	Group Art Unit:	1632
	:		
Appln. No.: 10/757,148	:	Examiner:	Robert Shiao, Ph. D.
	:		
Filing Date: January 14, 2004	:	Attorney Docket No.:	600630-12US (562723)
	:		
Title:	:		
	:		
METHOD FOR PRODUCING COUPLING COMPOUND	:		

**RESPONSE TO RESTRICTION REQUIREMENT**

This is in response to the Office Action dated March 17, 2006 (Paper No. 0306, hereinafter referred to as "the Office Action"), in the above-referenced application. This response is being timely filed on or before the expiration of the shortened statutory period for response which is set to expire on April 17, 2006.

Applicants respectfully request reconsideration by the Examiner in light of the following:

REMARKS

Claims 1-10 are currently pending in the present application.

*The Restriction Requirement*

In the Office Action, the Examiner requires an election of a single invention from among three groups of claims, as follows:

Group I (claims 1-4 and 7-10), in part, drawn to processes of making compounds of formula (3), wherein  $R^2$  is not a substituted or unsubstituted heteroaryl;

Group II (claims 1-4 and 7-10), in part, drawn to processes of making compounds of formula (3), wherein  $R^2$  is a substituted or unsubstituted heteroaryl; and

Group III (claims 5 and 6) drawn to catalysts of formula (i).

Additionally, upon election of one of the aforementioned inventions from Groups I-III, the Examiner further requires the election of a single compound or species from among the several disclosed species in the application for the purpose of reducing the burden of the Examiner's search.

The Examiner contends that restriction among the inventions of Groups I-III is proper because the compounds within the Markush group of the inventions of Group I and Group II allegedly do not share a common utility or a substantial structural feature essential to their common utility. No specific statement or rationale in support of the restriction with respect to Group III is set forth in the Office Action.

The Examiner further contends that the Species Election Requirement is necessary to ease the "serious burden imposed on the [E]xaminer" in performing a complete search on the "plethora of classes and subclasses in each of the Groups . . ." (See, the Office Action, p. 6).

On the foregoing bases, the Examiner requires Restriction to one of the aforementioned Groups I-III, and further requires election of a single disclosed species within the elected group.

Traversal of the Restriction and Species Election Requirements

In the Office Action, the Examiner has required election from among three groups of claims. The Examiner has divided the claims into two groups directed to processes of making compounds of formula (3), *i.e.*, Groups I & II, and a third group drawn to catalysts comprising a nickel compound and a compound of formula (i), *i.e.*, Group III. The Examiner has restricted the claims drawn to processes for making compounds of formula (3) into two groups based upon the Markush group set forth in claim 1 referring to the R<sup>2</sup> substituent. More specifically, the Examiner has required a restriction between: (i) the method claims wherein the substituent represented by R<sup>2</sup> represents a substituted or unsubstituted heteroaryl group, and (ii) the method claims wherein the R<sup>2</sup> substituent is NOT a substituted or unsubstituted heteroaryl group.

The Examiner contends that the restriction between Groups I & II is proper because the various substituent moieties of the Markush group allegedly do not share a common utility or a substantial structural feature disclosed as being essential to a common utility. The Examiner further contends that the substituents comprising heteroaryl moieties differ in their elements, bonding arrangements and chemical properties such that the inventions are independent and distinct. With respect to the restriction of Group III, directed to catalysts as set forth in claims 5 and 6, the Examiner offers no specific rationale for the restriction.

Applicants respectfully traverse the Examiner's restriction requirement and the arguments and contentions set forth in support thereof, for the following reasons. First, Applicants respectfully submit that any complete search covering methods of producing a cross-coupling compound of formula (3), wherein the method comprises reacting an organic halide of formula (1) with a boron compound of formula (2), in the presence of a base *and a catalyst comprising a nickel compound and a compound of formula (i), as claimed*, will almost certainly necessitate a search encompassing all three inventions set forth in the Office Action, regardless of whether R<sup>2</sup> in formula (3) is an alkenyl, aryl or heteroaryl.

In other words, searching the above described method will necessarily include a search of perhaps similar reactions carried out in the presence of a catalyst of Group III, and thus would include a search of the catalyst which the Examiner contends must be restricted. Additionally, limiting the Examiner's search to compounds of formula (III) wherein R<sup>2</sup>

represents a substituted or unsubstituted alkenyl or aryl group would not necessarily exclude references in which an aryl group bearing a heteroatom is disclosed. It is certainly not uncommon in chemical literature for compounds to be described as "aryl compounds" with a further description of the aryl compounds noting that the aryl compounds may include one or more heteroatoms. Essentially, the Examiner's Requirement for Restriction does not reduce or in any way minimize the scope of a complete search to be undertaken. Rather, the Restriction Requirement only serves to improperly increase the filing burden upon Applicants.

The foregoing is by no means an assertion that the inventions of Groups I-III are patentably indistinct from one another. Applicants' traversal is based, at least in part, on the fact that a suitable and appropriate search of the subject matter of claim 1, regardless of which type of substituent  $R^2$  represents, is likely to support the Examiner's simultaneous examination of all pending claims herein. Efficiency demands as much, more so than the imposition of a requirement that Applicants file two or more new divisional applications likely to require overlapping and possibly redundant searches.

As to the Examiner's Species Election Requirement, Applicants respectfully submit that the species election is unnecessary and improper. To begin with, Applicants' claimed invention is not directed to such a large number of species having no adequately searchable genus that it is necessary for the Examiner to require such an election. For example, with respect to the invention Group III, a search for a catalyst comprising a nickel compound and a compound of formula (i) is not so unduly broad that the Examiner must require the election of specific  $R^3$  and  $R^4$  substituents in the formula. The possible  $R^3$  and  $R^4$  substituents are not so numerous that a species election is necessary to make the Examiner's search manageable. Moreover, Applicants respectfully submit that the number of possible  $R^3$  and  $R^4$  substituents does not qualify as a "plethora" so large as to require the election of a single species.

In formula (i),  $R^3$  represents a substituted or unsubstituted alkyl group.  $R^4$  represents a hydrogen atom or a substituted or unsubstituted alkyl group. The substituents represented by substituted and unsubstituted alkyl groups is not so broad as to require the election of a particular species for the purposes of allowing the Examiner to conduct an adequate search of the claimed genus in this case. It is likely that any search directed towards a catalyst

comprising a nickel compound and a compound of formula (i) wherein the  $R^3$  substituent is a substituted or unsubstituted alkyl group is likely to result in similar references being identified regardless of whether the substituent is referred to as “alkyl”, “methyl”, “ethyl”, etc.

Applicants submit that the Examiner has not set forth a proper basis for restricting the invention of Group III from the inventions of Group I and Group II. Moreover, Applicants respectfully submit that the Examiner has unnecessarily restricted the inventions of Groups I and II as the Markush group set forth therein is not so structurally unrelated as to require restriction. Finally, Applicants respectfully submit that the number of species embodied and encompassed in the claims is not so numerous as to require the election of a single disclosed species for the purposes of examination. Accordingly, reconsideration, withdrawal of the Restriction Requirement and Species Election Requirement, and examination of all pending claims are respectfully requested.

Provisional Election with Traverse

In the event the Examiner is not persuaded to withdraw the restriction and species election requirements, Applicants provisionally elect, with traverse, the invention of Group III, claims 5 and 6, for prosecution on the merits thereof. Additionally, Applicants provisionally elect, with traverse, in response to the species election requirement, a compound of formula (i) wherein R<sup>3</sup> represents methyl and R<sup>4</sup> represents hydrogen. Applicants respectfully submit that claim 5 is generic to all disclosed species, and that claims 5 and 6 read on the elected species.

Respectfully submitted,

**Tamon Itahashi, et al.**

*April 17, 2006*  
(Date)

By: \_\_\_\_\_

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